



ITEM-WRITING WORKSHOP

SEPTEMBER 10, 2018



Paving the way for future PAs

AGENDA

- Basics of Item Writing
- Practice Item Writing
- Group Review of Items



BASICS OF ITEM WRITING



NCCPA ITEMS

Currently, on all NCCPA examinations, all items are
Multiple Choice, One Correct Answer

ANATOMY OF A MULTIPLE-CHOICE, ONE-CORRECT-ANSWER ITEM

- **Stem = Clinical Vignette + Lead-in Question**

A 75-year-old man comes to the office because he has had pain in his midabdomen after meals during the past 12 weeks. The patient says the pain lasts for one to two hours and use of antacids and H₂-receptor antagonists does not provide relief. The patient has lost 30 lb since his symptoms began. Which of the following is the most likely diagnosis?

- **Options = Correct Answer (Key) + Distractors**

- (A) Diverticulitis
- (B) Lumbar disk disease
- (C)* Mesenteric ischemia
- (D) Renal colic
- (E) Subacute appendicitis

STEM: CREATING A CLINICAL VIGNETTE

- Standard components
 - Patient age and gender
 - Site of care (office, hospital, emergency department, etc)
 - Presenting symptoms
 - Duration of symptoms
 - Pertinent personal and/or family history
 - Vital signs
 - Findings on physical examination
 - Findings on imaging, laboratory, and other studies
- A vignette may include only some of these components, depending on the question being asked

STEM: CREATING A CLINICAL VIGNETTE

- Focus on a single, clearly defined topic
 - Plan a specific scenario involving a patient with a clear medical presentation
- Exclude irrelevant information that may mislead the examinee - this is often referred to as “window dressing” or “red herrings”
- If details such as a patient’s current job, behavior, or family medical history do not relate to the item in a meaningful way - do not include them in the vignette

STEM: CREATING A CLINICAL VIGNETTE

- Include information that creates a realistic clinical picture
 - If a patient's vital signs typically would be recorded in a particular clinical setting and omitting them from the vignette might be confusing to examinees, the vital signs should be included (“within normal limits” can be specified if appropriate)
 - It is important to include usual information that a practitioner would expect to see in a patient with particular symptoms
- Do not use abbreviations, acronyms, or jargon
 - Establish a “level playing field” for examinees by avoiding terminology that may not be well known or understood by everyone

STEM: WRITING A LEAD-IN QUESTION

- Create a clearly worded question that is focused on one specific point
- Include superlatives such as *most* or *best* to lead to only one correct answer
 - Phrases such as “most likely” and “best represents” make correct answers defensible if challenged by examinees
- Include the phrase “of the following” to clearly and specifically relate the lead-in question to the options
 - Relating the lead-in question specifically to the listed options removes the possibility of other correct answers

STEM: WRITING A LEAD-IN QUESTION

- Avoid absolutes such as *never* and *always*
 - Items that include absolutes are difficult to defend if challenged by examinees
- Avoid indefinite words such as *frequently* and *often*
 - Indefinite terms will be interpreted differently by various examinees
 - Indefinite terms in a lead-in question lead to difficulty defending and supporting the correct answer if challenged by examinees

STEM: WRITING A LEAD-IN QUESTION

- Avoid negative and true/false phrasing
 - Do not ask questions such as
 - *Which of the following is NOT the cause of this patient's symptoms?*
 - *Which of the following is LEAST likely to occur?*
 - *Which of the following statements about _____ is true?*
- Try the “Cover the options” test
 - With a focused and well-written lead-in question, examinees are able to have the correct answer in mind before reading the options
 - With an unfocused lead-in, examinees will not have an idea of what is listed in the options

HINT: LEAD-IN QUESTION

Instead of asking a broad or general question such as

This patient is at greatest risk for which of the following?

Add detail to ask a focused, specific question:

This patient's history of cigarette smoking places him at greatest risk for which of the following ocular disorders?

OPTIONS: WRITING THE KEY AND DISTRACTORS

- Compose the correct answer (key)
- Formulate three or four other options (distractors)
 - Reasonable/plausible but not possibly correct
 - Typical errors or misconceptions
 - Realistic (not “make-believe” wrong answers)

A well-constructed option set: most examinees (mainly high scorers) choose the key, but each distractor is chosen by some examinees. An option that is not chosen by any examinees is not a good distractor.

OPTIONS: WRITING THE KEY AND DISTRACTORS

All options should be

- homogeneous (e.g., all laboratory studies, all diseases, all procedures, all medications)
- grammatically parallel and following the lead-in question
- similar in length and complexity
- mutually exclusive (not overlapping)

All of the above and *None of the above* are not acceptable for multiple-choice, one-correct-answer items.

HINT: OPTIONS

Instead of making the correct answer stand out as different:

... Which of the following is the most likely diagnosis?

- (A) Appendicitis
- (B) Cholangitis
- (C) Gastroenteritis
- (D) Pancreatitis
- (E)* Small-bowel obstruction

Create an option set where all distractors are considered:

...Which of the following is the most likely diagnosis?

- (A) Appendicitis
- (B) Gastroenteritis
- (C) Liver abscess
- (D)* Small-bowel obstruction
- (E) Urinary tract infection

APPLICATION OF KNOWLEDGE VERSUS RECALL

Application of Knowledge:

- Include detailed clinical vignettes
- Assess examinees' knowledge as well as their ability to apply that knowledge to a realistic patient/clinical situation
- Good for testing diagnosis and management

Recall:

- Items are generally short and do not include detailed clinical vignettes
- Assess examinees' ability to remember an isolated fact
- Good for testing anatomy and basic science

TEST-WISE CLUES

Common item-writing error: clues to the correct answer

Items that contain clues to the correct answer allow test-wise examinees to figure out and choose the correct answer — even when they do not know or understand the content

Are you test-wise?

FIND THE CLUE

A 42-year-old man has pain, swelling, and paresthesia in his right forearm and hand one week after application of a long arm cast to the right upper extremity as treatment of a fracture of the proximal ulna. The symptoms began shortly after the cast was applied and have been worsening. On removal of the cast, the forearm flexor surface appears atrophic and the wrist and digits are contracted. Which of the following is the most likely diagnosis?

- (A) Boutonnière deformity
- (B) Carpal tunnel syndrome
- (C) Dupuytren contracture
- (D) De Quervain tenosynovitis
- (E) Volkmann contracture

CLUE: PAIRED OPTIONS

A 42-year-old man has pain, swelling, and paresthesia in his right forearm and hand one week after application of a long arm cast to the right upper extremity as treatment of a fracture of the proximal ulna. The symptoms began shortly after the cast was applied and have been worsening. On removal of the cast, the forearm flexor surface appears atrophic and the wrist and digits are contracted. Which of the following is the most likely diagnosis?

- (A) Boutonnière deformity
- (B) Carpal tunnel syndrome
- (C) Dupuytren contracture
- (D) De Quervain tenosynovitis
- (E)* Volkmann contracture

- Pairing of options C and E alerts the test-wise examinee that one of these must be the correct answer and gives a 50/50 chance of guessing correctly.

FIND THE CLUE

A 53-year-old man with chronic pancreatitis has had abdominal pain, anorexia, and diarrhea associated with his condition for the past three days. Initiation of therapy with which of the following classes of medications is most likely to be effective in preventing ongoing complications of pancreatitis in this patient?

- (A) Nonsteroidal anti-inflammatory drugs
- (B) Opioid antagonists
- (C) Pancreatic enzyme replacements
- (D) Short-acting opiate analgesics
- (E) Thiazolidinediones

CLUE: STEM CLUE/REPEATED WORDS

A 53-year-old man with chronic **pancreatitis** has had abdominal pain, anorexia, and diarrhea associated with his condition for the past three days. Initiation of therapy with which of the following classes of medications is most likely to be effective in preventing ongoing complications of **pancreatitis** in this patient?

- (A) Nonsteroidal anti-inflammatory drugs
- (B) Opioid antagonists
- (C)* **Pancreatic** enzyme replacements
- (D) Short-acting opiate analgesics
- (E) Thiazolidinediones

- Repetition of “pancreatitis” in the stem and “pancreatic” in option C clues that option C as the correct answer.

FIND THE CLUE

A 73-year-old man is brought to the urgent care clinic 90 minutes after he suddenly became confused and incoherent. Medical history includes hypertension, type I diabetes mellitus, and hypercholesterolemia. Pulse rate is 88/min, respirations are 18/min, and blood pressure is 165/95 mmHg. Physical examination shows no abnormalities. Electrocardiography shows sinus rhythm with normal ST segments and T waves. Which of the following is the most appropriate next step?

- (A) CT angiography
- (B) Immediate measurement of blood glucose level by finger stick and administration of dextrose if blood glucose level is low
- (C) Intravenous administration of fluids
- (D) Referral of the patient to a cardiologist
- (E) Transfer of the patient to the hospital

CLUE: LONGEST, MOST DETAILED OPTION

A 73-year-old man is brought to the urgent care clinic 90 minutes after he suddenly became confused and incoherent. Medical history includes hypertension, type I diabetes mellitus, and hypercholesterolemia. Pulse rate is 88/min, respirations are 18/min, and blood pressure is 165/95 mmHg. Physical examination shows no abnormalities. Electrocardiography shows sinus rhythm with normal ST segments and T waves. Which of the following is the most appropriate next step?

- (A) CT angiography
- (B)* **Immediate measurement of blood glucose level by finger stick and administration of dextrose if blood glucose level is low**
- (C) Intravenous administration of fluids
- (D) Referral of the patient to a cardiologist
- (E) Transfer of the patient to the hospital

- **Option B stands out as the correct answer because it is the longest, most detailed option and the only option that includes a second/follow-up step.**

FIND THE CLUE

Which of the following are the two most common bacteria causing acute sinusitis?

- (A) *Staphylococcus aureus* and *Escherichia coli*
- (B) *Staphylococcus aureus* and *Haemophilus influenzae*
- (C) *Streptococcus pneumoniae* and *Bacteroides fragilis*
- (D) *Streptococcus pneumoniae* and *Haemophilus influenzae*
- (E) *Streptococcus pneumoniae* and *Streptococcus pyogenes*

CLUE: CONVERGENCE

Which of the following are the two most common bacteria causing acute sinusitis?

- (A) *Staphylococcus aureus* and *Escherichia coli*
- (B) *Staphylococcus aureus* and *Haemophilus influenzae*
- (C) *Streptococcus pneumoniae* and *Bacteroides fragilis*
- (D)* *Streptococcus pneumoniae* and *Haemophilus influenzae*
- (E) *Streptococcus pneumoniae* and *Streptococcus pyogenes*

- The correct answer is clued as the option that has the most terms in common with the other options.

FIND THE CLUE

A 20-year-old woman with recently diagnosed tinea versicolor comes to the office for initiation of treatment. She asks how quickly her skin pigmentation will return to normal. Which of the following is the most appropriate response to this patient?

- (A) The pigment changes will not resolve
- (B) The pigment changes will wax and wane
- (C) The pigmentation may take months to return to normal
- (D) The pigmentation will darken
- (E) The pigmentation will return to normal immediately

CLUE: ABSOLUTE TERMS

A 20-year-old woman with recently diagnosed tinea versicolor comes to the office for initiation of treatment. She asks how quickly her skin pigmentation will return to normal. Which of the following is the most appropriate response to this patient?

- (A) The pigment changes **will not** resolve
- (B) The pigment changes **will** wax and wane
- (C)* The pigmentation **may** take months to return to normal
- (D) The pigmentation **will** darken
- (E) The pigmentation **will** return to normal immediately

- The distractors are easily ruled out because each one contains an absolute term, and such definite results are not common in medicine.

FIND THE CLUE

A 72-year-old woman comes to the emergency department because she has had rash on the face associated with pain, tearing, and decreased vision in the left eye for the past two days. She says she had a flulike illness one week ago and still feels tired. Physical examination shows clusters of papules and clear vesicles on an erythematous base on the left side of the forehead, left upper eyelid, and nose. Based on these findings, which of the following cranial nerves is most likely involved?

- (A) II
- (B) III
- (C) V
- (D) VII
- (E) VIII

CLUE: UNEQUAL NUMERIC INTERVALS

A 72-year-old woman comes to the emergency department because she has had rash on the face associated with pain, tearing, and decreased vision in the left eye for the past two days. She says she had a flulike illness one week ago and still feels tired. Physical examination shows clusters of papules and clear vesicles on an erythematous base on the left side of the forehead, left upper eyelid, and nose. Based on these findings, which of the following cranial nerves is most likely involved?

- (A) II
- (B) III
- (C)* V
- (D) VII
- (E) VIII

- Larger intervals before and after the key clue option C as the correct answer. Also – in numeric options, test-wise examinees know that the middle value is usually the correct answer.

ITEM CLONES

Items with good vignettes can be **CLONED** by using the same or a modified version of the vignette with a different lead-in and option set.

PROS:

- Quickly and easily create multiple items
- Address various facets of a clinical scenario (diagnosis, studies, treatment, risk factors, patient advice, etc.)

CONS:

- Cloned items are most useful for examinations with multiple test forms
- Cloned items become enemies

WHAT ARE ENEMIES?

Enemies are items that cannot appear on the same test form.

What is considered an enemy relationship?

- The text of one item contains the correct answer of another item
- Two or more items are so similar that knowing the answer to one means that the examinee knows the answer to the other(s)
- Two or more multiple-choice, one-correct-answer items have the same vignette



Questions?



PRACTICE ITEM WRITING



GETTING STARTED: CONTENT

DO

- Focus on well-known information and facts
- Include specific content and/or skills
- Choose appropriate topics for the target examinees
- Include current standards of care
- Follow item-writing guidelines
- Support content with published sources

DON'T

- Focus on trivia, minutiae, or rare content
- Choose a topic that is specialized for a subset of examinees
- Include insensitive or biased content
- Base content on opinion, unproven trends, or unapproved/off-label use
- Include obsolete procedures, drugs, etc.

GETTING STARTED: FORMAT

DO

- Create a clear clinical vignette
- Write a focused and specific lead-in question
- Choose a clearly correct answer
- Compose distractors that are plausible but not possibly correct
- Make options parallel and homogeneous
- Avoid test-wise clues

DON'T

- Write ambiguous or unfocused lead-in questions
- Include tricks or irrelevant details
- Create options that overlap
- Write “make-believe” options



GROUP REVIEW OF ITEMS



ITEM REVIEW GUIDELINES

For each item, ensure that each criterion is met:

- ✓ The key is clearly correct
- ✓ The distractors are plausible but not possibly (or partially) correct
- ✓ The content is important, relevant, and fair for the target examinees
- ✓ The content represents current standards of care

All reviewers' input is important – speak up if you don't agree with the item or with changes to the item

THANK YOU!

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